Changing Care Provision in Times of Changing Contexts: the Experience of Adult Children during the Pandemic in the UK

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Abstract:

The COVID-19 pandemic imposed the suspension of many care services, and families had to choose between adhering to lockdown measures or caring for vulnerable relatives. This study revisits the Informal Care Model by explicitly incorporating the role of changing circumstances during the pandemic to understand care provision by adult children. Using nationally representative data from the UK, statistical analyses reveal that usual suspects, such as women, were more likely to undertake additional care tasks. However, they also highlight new enabling factors for care provision which have arisen from the pandemic, such as the ability to work from home.

Key words/short phrases:

Informal Care Model, COVID-19, population ageing, intergenerational care

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Introduction

Population ageing is indisputably a remarkable achievement, reflecting the advancement of healthcare and living conditions that have allowed people to live longer, but also healthier lives (Rudnicka et al, 2020). Globally**,** the share of individuals aged 65 and over is projected to rise from 10% in 2022 to 16% by 2050 (Gerland et al, 2022). In the UK, the older population is also expected to grow, with the proportion of those aged 65 and over estimated to increase from 19% in 2019 to 24% of the total population by 2043 (Lewis, 2021). Population ageing presents many opportunities to society, including positive effects on labour and financial markets (Koller et al, 2014; Zygouri et al, 2021). Hence, it is extremely important that policies seek to encourage healthy ageing and maximise the potential of ageing populations (Huber and Skidmore, 2003).

Whilst in many aspects population ageing is a success story, it also poses several challenges. For example, age-related vulnerabilities and health problems can motivate individuals to seek support, increasing the demand for both formal and informal care (Quashie et al, 2022). Formal care is paid care typically delivered by a healthcare institution (Li and Song, 2019), whereas informal care is the provision of unpaid care by an individual to someone with long-term illness, chronic conditions, or other needs (Cohen et al, 2021a; Foley et al, 2023).

The demand for formal and informal care accelerated during the COVID-19 pandemic (Bergmann and Wagner, 2021). In March 2020 the UK government mandated a series of lockdown restrictions aimed at curtailing the virus. This led to unprecedented changes to the organisation of social life, including to care networks (Soga et al, 2021). Many individuals with health and social care needs were left without formal support, as services were reduced or suspended, in turn highlighting the crucial role of informal carers in providing care to those in need (Río-Lozano et al, 2022). The increased demand for informal care was particularly prevalent for older adults who, regardless of individual medical conditions, were deemed clinically vulnerable and advised to 'stay at home' throughout the lockdown period (Cabinet Office, 2020).

Kin relationships represent latent webs of support that can be activated in times of need, indicating that adult children form a salient part of the caring network towards their parents (Arpino et al, 2021). Despite the increased demand, the precise effect of the pandemic on caring performed by adult children is unclear. The pandemic undoubtedly challenged intergenerational exchanges, with physical distancing measures potentially restricting adult children from meeting their non-co-resident parents in person (Gilligan et al, 2020). Thus, throughout the pandemic adult children were likely confronted with the difficult decision of either adhering to strict isolation to protect their parents from infection, or to provide much-needed care (Raiber and Verbakel, 2021).

Within the UK context, the effect of the pandemic on informal caring to the older population remains understudied. The majority of studies place their focus on understanding the impacts of the pandemic on the psychological wellbeing of care providers (e.g., Whitley et al, 2021), or adopt a qualitative research approach (e.g., Sriram et al, 2021). Evandrou et al. (2020) presented the first quantitative analysis into the impact of the pandemic on informal caring for older adults in the UK. The authors examined the level and type of informal care received

by older individuals during the first stages of lockdown. However, they did not explore changes from the perspective of those who were providing care to the older population. Knowledge about the characteristics of care providers and the implications these characteristics have on predicting care provision during the pandemic remains limited. This study will address this gap by using nationally representative data from the UK Household Longitudinal Study (ISER, 2022) to investigate the characteristics of adult children who experienced a change in informal care provision to their older non-co-resident parents in the COVID context.

Care Provision in Times of Changing Contexts

This study is theoretically informed by the Informal Care Model (ICM) (Broese van Groenou and Boer, 2016) whose three key elements (needs, dispositional factors, context) can help describe and explain caring experiences during the pandemic and the extent to which they differ from pre-pandemic experiences. Although the ICM was originally designed to study the onset of informal care, the framework can be applied to empirical studies to understand variations and heterogeneity in informal care provision.

Studies that have applied the ICM have primarily focused on one element, namely the dispositional factors associated with caring (e.g., Brandt et al, 2023). Less attention has been paid to the role of context; and even less so to the way changing contextual circumstances may impact on the other elements of the model. To the best of our knowledge there has only been one study which has applied the ICM to explore care experiences in the changing context associated with the pandemic (Raiber et al, 2022). Using quantitative data from the Netherlands, the authors use the pandemic as an external shock to empirically test the validity of the ICM from a dynamic perspective. They conclude that the ICM is a suitable framework for studying changes in informal care provision particularly so with the inclusion of dynamic indicators. We add to their work by proposing an adapted formulation of the model which explicitly accounts for times of changing contexts, and how they impact on needs and dispositional factors (Figure 1).

Figure 1 here

Figure 1: Author's adaptation of the Informal Care Model (Broese van Groenou and Boer, 2016, pp.273) to visually represent caring experiences in times of changing context. The bolded elements are those that are modelled in this paper.

We apply the model to the empirical study of care exchanges in the context of the pandemic in the UK. Whilst care needs, and their potential changes in the pandemic context, are not modelled in this paper, they are still important to acknowledge as they constitute one element of the ICM. Accordingly, informal caring is triggered when someone in the network needs care. The needs of those receiving care and subsequently the type of care given can vary, but typically informal care comprises assistance in four main areas, (1) routine activities of daily living (e.g., bathing and eating); (2) instrumental activities of daily living (e.g., shopping and managing finances); (3) companionship, emotional and financial support; and (4) medical and nursing tasks (Li and Song, 2019). Care needs are dynamic, and in the COVID context, the type of care needs may have changed compared to pre-pandemic times (Settersten et al, 2020).

For example, Evandrou et al.'s (2020) results reveal that a significant proportion of older adults received an increased level of help across a range of activities including shopping and assisting with internet access, from either those who had provided care to them before the pandemic or from new carers. This increased level of care received could reflect the changing care needs for the older adult population which may have emerged or been exacerbated during the pandemic.

The ICM then posits that becoming a carer depends on individual dispositional factors, or the carer's ability and willingness to take on caring tasks. With the decision to provide care being multifactorial, a study of caring must investigate how a range of demographic and socioeconomic factors may shape caring experiences (Quashie et al, 2022; Hess et al, 2023). Our adapted version of the ICM acknowledges that some new dispositional factors might have emerged due to the changing context, whilst others generally remained unchanged amidst the pandemic, despite a clear-cut distinction not always being possible.

Among the dispositional factors considered to be mostly unaltered by the pandemic context, feminist scholars have long recognised gender as an important factor associated with caring to older kin, with women typically carrying out the majority of caring (Medjuck et al, 1992; Swinkels et al, 2019). The literature attributes two reasons for the disproportionate involvement of women in informal caring. Firstly, the unequal distribution of opportunities and responsibilities between genders, caused by the different structural contexts in which men and women live, may push women into the caring role (Pinquart and Sörensen, 2006). Secondly, it is argued that women may feel obliged to care in a patriarchal society, with caring being consistently socially constructed as a 'feminine type' of activity (Cunha and Atalaia, 2019).

The composition of a carers family network, including their marital status and presence of siblings, is also commonly linked to the provision of informal care. For example, singles often have more time to provide care, whilst married caregivers can be assisted in spousal chores, creating them time to provide care (Henz, 2009). Sibship is another important factor that can shape caring exchanges, as it may produce different expectations and attitudes towards filial responsibilities (Spitze and Logan, 1991; Stuifbergen et al, 2008). Individuals without siblings may feel greater caring responsibilities, as their parents may have no alternative children to rely on for care (Vergauwen and Mortelmans, 2019). In contrast, individuals with siblings may 'free ride', failing to take on the caring tasks and instead relying on their siblings to provide care (Maruyama and Johar, 2017).

The carer's level of education may also influence care provision. The higher educated may face a restricted and geographically constrained job market, creating difficulty to have a job close to a parental home, making it harder for them to provide informal care (Kalmijn, 2006). Financial costs involved in caring, such as travel expenditure, potentially form a barrier to providing informal care, meaning those in poorer financial conditions may find providing care more challenging (Broese van Groenou and Boer, 2016). Adult children from socio-economically disadvantaged backgrounds may be unable to afford costly formal care for their parents, and therefore themselves have to step in to provide informal care (Gardiner et al, 2020). Lastly, prior studies found significant ethnic disparities in caregiving exchanges (Do et

al, 2014). This suggests that differences in cultural expectations and norms across ethnic groups may be important in shaping care provision.

In addition to the above factors, the research model also encompasses new dispositional factors of care provision which may have altered or emerged during the pandemic including childcare responsibilities, health status and work status. Pre-pandemic research has shown that the presence of dependent children within an adult child's household was an important predictor of kin contact and care provision (Wiemers and Bianchi, 2015). This is especially relevant within the COVID context, as mandated school and childcare closures meant that adult children may have experienced increased demand at home, leaving them less time to provide informal care to their parents (Del Boca et al, 2020; Vergauwen et al, 2022). Another important factor is the general level of health of the caregiver, with many carers themselves having co-morbidities and poor health, which could put them at heightened risk of COVID mortality and affect their ability to provide care (Bauer and Sousa-Poza, 2015). Furthermore, several studies have found a trade-off effect between employment and informal caring, with people with lower labour market attachment having more availability to provide care, potentially because of lower opportunity costs (Carmichael et al, 2010; Stanfors et al, 2019). This is important to consider with the changes that occurred to the labour market during the pandemic (Reichelt et al, 2020). For example, those with 'keyworker' status may have found it difficult to provide informal care due to their demanding and pivotal roles (Power and Herron, 2021). In contrast, increases in work-from-home arrangements may have generated more time for individuals to provide care (Okuyan and Begen, 2022; Deole et al, 2023).

With lockdown measures mandating many individuals to stay at home to prevent the spread of the virus, the geographies associated with caring are an additional set of dispositional factors which should be considered during the pandemic context. Geographical distance has widely been recognised as a leading explanation for why some adult children are excluded or remain distant from the kin support network and in turn are likely to limit their provision of care (Shelton and Grundy, 2000; Wiles, 2003). However, whilst proximity implies physical closeness, it does not equate to emotional closeness, and therefore a carer may be physically distant but emotionally proximate and thus still play an important role in providing informal care during the pandemic (Milligan and Wiles, 2010). For example, the changing topographies of care, relating to the development and usage of communication technologies, can enable informal care provision whilst being geographically distant, leading to spatial and temporal rescaling of informal care exchanges (Schwiter and Steiner, 2020). Furthermore, it is possible that there was an increased salience to the community context of care during the pandemic as individuals living in close geographical proximity may have felt a sense of responsibility to check in on one another to ensure potential care needs were met (Guanlan et al, 2022). Additionally, disparities between rural and urban healthcare availability can also affect informal care provision (Di Gessa et al, 2022). Typically, rural healthcare facilities are less well-resourced compared to their urban counterparts, indicating that informal carers in rural areas may face additional care strains (Henning-Smith, 2020; Cohen et al, 2021b).

As evident from the literature review there are a number of important factors which help to explain care experiences, some of which are specific to the context under study. For example, whilst gender is usually associated with caring, work status, captures new dispositional factors that may have emerged during the pandemic context, such as the

ability to work from home. Thus, grounded by the adapted ICM, this study will draw on a range of individual demographic, socio-economic and geographic characteristics, with the aim to elucidate the dispositional factors influencing the act of caring, as well as those in times of changing contexts surrounding the pandemic. Although this study does not explicitly account for the needs of care recipients, and for their changes due to the pandemic, this element of the ICM is implicitly incorporated as it is likely to activate the provision of informal care.

This study will answer the following research questions:

Research Question 1: Were there changes compared to pre-pandemic times in the extent to which adult children cared for their parents outside of the household?

Research Question 2: What individual dispositional factors are associated with changes in the provision of informal care?

Research Question 3: Did the type of care delivered by adult children to their parents change, for those who provided care before and during the pandemic?

Data and Methods

This study uses quantitative data from the UK Household Longitudinal Study 'Understanding Society' (UKHLS). The UKHLS is a large-scale, nationally representative, longitudinal panel study, which collects information about people's demographic, socioeconomic, and geographic characteristics alongside key topics such as their informal care exchanges. Adults aged 16+ in sampled households have been surveyed annually since 2009 with 13 waves of data currently available. Alongside these main survey waves, on nine occasions between April 2020 and September 2021, study participants were invited to complete a web survey, which monitored the impact of the pandemic on their lives. The COVID study builds on the longitudinal strengths of the main survey, as individual records can be linked through a personal unique identifier. Thus, the UKHLS is an ideal source to analyse people's informal care exchanges and their comparisons to pre-pandemic times. This study exploits wave 9 of the main survey (2017-2019), the last complete wave to exclude any pandemic data, and wave 1 from the COVID study (April 2020). The sample was restricted to adult children, aged 18-65, who had at least one non-co-resident parent alive, resulting in a total analytical sample of 7,459 adult children. To adjust for potential sample-bias the UKHLS COVID-19 weights were employed.

To compare informal care exchanges to pre-pandemic times the outcome variable is partially derived from a self-reported measure of change in care exchanges between individuals not living in the same household during the pandemic as compared to pre-pandemic times (Figure 2).

Figure 2 here

Figure 2: Self-reported measure of change in care exchange question with answers

This measure was collected in April 2020, at the time of the UK's first and strictest lockdown, and therefore is an important analytical time point to consider when comparing caring exchanges to pre-pandemic times, as it captures the immediate response of carers following the introduction of the lockdown measures. Unfortunately, the framing of this question does not directly refer to whom the care is being directed. There is a separate question which asks survey respondents to whom they are caring for during the pandemic. As respondents were able to provide more than one answer to this question, it is not possible to know exactly how the intensity of care provision towards specific individuals changed during the pandemic. However, the majority of care exchanges is directed towards parents. For example, 67% of adult children who reported providing more care during the pandemic also reported that they provided care to their parents. Thus, in spite of this limitation, the self-reported measure of changes in care provision can be used to approximate changes in intergenerational care exchanges occurring between adult children and their parents.

The self-reported measure of care exchanges variable was combined alongside a binary measure of pre-COVID care activities, indicating whether an individual either (a) provided care to their parents in the pre-COVID time period or (b) did not provide care to their parents pre-COVID. This combined variable was recoded into four categories depending on whether individuals:

(a) Never cared - defined as those who did not care pre-COVID and experienced no change in care provision during the pandemic (i.e., they never cared)

(b) Same provision - defined as those who cared pre-COVID and experienced no change in care provision during the pandemic (i.e., their provision stayed the same)

(c) Provided more care - defined as (i) those who provided care pre-COVID and either provided more care to the same individual or provided care to those they had not previously cared for, or (ii) those who did not provide care pre-COVID but who provided care to those they had not previously cared for

(d) Provided less care - defined as those who cared pre-COVID but gave less care during the pandemic

Multinomial logistic regression models were estimated to investigate the characteristics of individuals who experienced changes in their informal care provision compared to pre-pandemic times. Multinomial logistic regression is employed to compare the probability that an individual 'Provided More Care' and that of 'Provided Less Care' and 'Same Provision' to the reference category of 'Never Cared'. Formally, the probability that an individual experienced changes in their provision of informal care is as follows:

$$\pi_i^{(m)} = \frac{\exp(\alpha^{(m)} + \beta^{(m)}\mathrm{X}_i)}{1 + \exp(\alpha^{(2)} + \beta^{(2)}\mathrm{X}_i) + \exp(\alpha^{(3)} + \beta^{(3)}\mathrm{X}_i) + \exp(\alpha^{(4)} + \beta^{(4)}\mathrm{X}_i)}$$

where $\pi_i^{(m)}$ is the probability of being in the alternative m of the categorical response Y_i (with m=1 if the individual experienced 'Never Cared' in informal care provision, the reference

category, m=2 if the individual 'Same Provision' and m=3 if the individual 'Provided More Care' and m=4 if the individual 'Provided Less Care') and X_i being a vector of individual-level explanatory variables.

The model encompasses a comprehensive array of explanatory variables (Table 1), which are theoretically grounded from the adapted ICM and aimed at accounting for the demographic, socio-economic and geographic dispositional factors of adult children.

Results

Table 1 provides the percentage distribution of the outcome variable and the explanatory variables grouped into demographic, socio-economic and geographic characteristics. During the pandemic, 28.6% of adult children remained uninvolved in caring outside of their household. 15.9% reported no changes in the extent of care they provided, whilst 12.5% reported providing less care during the pandemic than pre-pandemic. On the other hand, the majority of respondents reported providing more care, with 43.1% of adult children providing more care in April 2020 than in comparison to the pre-COVID time period. Overall, the results indicate that a larger portion of individuals stepped up to provide additional or more care during the pandemic, as opposed to the relatively smaller groups whose care decreased or stayed the same during the pandemic.

Table 1 here
Table 1: Descriptive statistics

Results from the estimation of the fully adjusted multinomial logistic regression are reported in Table 2 in the following order: 'Never Cared' (column a), 'Same Provision' (column b), 'Provided More Care' (column c) and 'Provided Less Care' (column d). The results of the regression analysis are presented as average marginal effects (AMEs) alongside their p-values. AMEs are calculated by comparing the predicted probabilities of each outcome whilst holding the other variables constant. Therefore, AMEs can be used to estimate how much the probability of each outcome changes on average when one of the categorical independent variables change.

The remainder of this section will focus on the results from the 'Provided More Care' category, being statistically, as well as substantively, the most relevant category. For ease of interpretation, results from the fully adjusted model will be displayed graphically and commented on separately for each sub-set of variables: demographic, socio-economic and geographic. Results for the other three categories, as well as the descriptive analyses of changes in the typology of care, will be presented at the end of this section.

Table 2 here
Table 2: AMEs from the fully adjusted multinomial logistic regression.

The impact of the pandemic on informal care provision was not homogeneous across all demographic groups (Figure 3).

Figure 3 here

Figure 3: Selected findings from the multinomial regression model on changes in care provision: fully-adjusted AME for the demographic covariates on the probability of providing more care.

Individuals aged 40-49 and 50+ had a 13 percentage point (pp) and 12pp higher probability of providing more care respectively, both statistically different from zero at 99% confidence level. There are a variety of reasons which could be attributed to this pattern of older adult children providing more care to their parents compared to younger adults. For example, as people age, they may feel a stronger sense of duty to care for family members and thus are more likely to take on caring tasks (Grundy and Shelton, 2016). Furthermore, this pattern likely reflects that older adult children have parents who are older themselves, who in turn have greater health and social care needs alongside COVID susceptibility, and thus require more support from their children (Vlachantoni, 2017). The gender of adult children was another statistically significant factor influencing the provision of informal care, with women having an 8pp higher probability of providing more care relative to males. This result follows closely in line with the pre-COVID literature which established, for a variety of reasons, that care responsibilities primarily fall on women (Swinkels et al, 2019). British individuals had a 10pp higher probability of providing more care relative to non-British. This may be due to the fact that British individuals were those most likely to have family members resident in the UK, meaning that they had more opportunities, ability and accessibility to provide care to them. Furthermore, it is possible that higher co-residence rates among non-British individuals (SAGE, 2020) may lead to the variable not capturing this demographic's increased levels of care since the focus of this study is specifically on caring outside the household.

Individuals who were married or co-habiting with their partner were 4pp more likely to provide more care. This is potentially explained by the fact that married or cohabiting carers can be assisted in spousal and household responsibilities, creating extra time for them to provide care (Henz, 2009). In contrast to the theoretical mechanism explored in the literature (Del Boca et al, 2020), individuals with at least one dependent child in the household were 3pp more likely to provide more care. Although statistically insignificant, adult children with no siblings alive had a 3pp higher probability of providing more care relative to individuals with siblings. Thus, this result is suggestive of greater caring responsibilities for only children (Vergauwen and Mortelmans, 2019), but also of the possibility of 'free riding' for people with siblings (Maruyama and Johar, 2017).

As clear from the results in Figure 4, the pandemic was also socially patterned and did not affect everyone in the same way (Bambra et al., 2020).

Figure 4 here

Figure 4: Selected findings from the multinomial regression model on changes in care provision: fully-adjusted AME for the socio-economic covariates on the probability of providing more care.

Interestingly, the results show that adult children who worked from home during the pandemic had a 12pp higher probability of providing more care relative to those who did not work. This statistically significant relationship provides evidence of potential competing time

pressures associated with employment and informal caring, with adult children working from home potentially having greater work flexibility, creating time to care for their parents (Okuyan and Begen, 2022). In addition, those who worked outside including keyworkers (who were potentially more exposed to the risk of contracting the virus), were up to 9pp more likely to have provided more care. This provides evidence that despite the risks associated with spreading the virus, many adult children were involved in providing much-needed care to their older adult parents. Individuals with higher levels of education were more likely to provide more care, for example, those with tertiary education were 7pp more likely to provide more care relative to those with lower secondary or below qualifications. Individuals who reported better health were over 6pp more likely to provide care during the pandemic relative to those who were in poorer health, indicating that poor health of the carer acts as a barrier to caring. This result is likely explained by the fact that healthier individuals may have had fewer co-morbidities which would have placed them at heightened COVID vulnerability. For example, healthy individuals were unlikely to have been deemed clinically vulnerable and asked to shield, and thus were the most likely to be available to provide care to those in need. Results showed no discernible differences across individuals with different financial circumstances, net of other socio-economic characteristics.

The geographies of adult children, to an extent, were also influential in impacting informal care provision (Figure 5).

Figure 5 here

Figure 5: Selected findings from the multinomial regression model on changes in care provision: fully-adjusted AME for the geographic covariates on the probability of providing more care.

Results show that individuals residing in Northern Ireland were 8pp less likely to have provided more care relative to those living in England. This result could be explained by the fact that Northern Ireland has the lowest proportion of older adults (65 and over), meaning that there are potentially fewer older parents who may have required care from their children (NISRA, 2022). The results from the remaining categories of the country variable indicate that there is cross country homogeneity in terms of care provision. This result is potentially explained by the homogeneity of the lockdown restrictions across the UK as the time focus of this study is April 2020, a period in which all of the UK's countries were subject to the same lockdown measures and restrictions. The urban or rural area variable, despite its theoretical relevance was statistically insignificant, with no differences in the probability of providing more informal care between urban and rural areas. In contrast, a clear pattern emerges from the results which is that the closer the adult child lived to their parents, the higher the probability they would provide more informal care. For example, individuals who lived under 15 minutes from their parents had at 13pp higher probability of providing more care, relative to those who lived over 2 hours away. These results support the idea that geographical distance has widely been recognised as a leading explanation for why some adult children are excluded, or remain distant from the kin support network, and in turn are likely to limit their provision of care (Schafer and Sun, 2022).

The analyses for the other three outcomes complement the findings. First, AMEs for the 'Never Cared' and 'Same Provision' outcomes highlight which population subgroups did not

experience changes in their care provision, either because they never cared for people outside their household, or because they continued to provide the same amount of care as before the pandemic. Second, results for the 'Provided Less Care' outcome reinforce that the pandemic led to changes in care provision and suggest that for some population subgroups the changes were in both directions. For example, on average whilst some women were more likely to have provided more care, others were more likely to have provided less care, indicating that there are contrasting mechanisms which could influence care provision during the pandemic. For those women who had a higher probability of providing less care, the increased responsibilities within the household may have limited their time and ability to provide informal care (Del Boca et al, 2020). Furthermore, despite some individuals who lived close to their parents being more likely to provide more care, others living within the same proximity were more likely to have provided less care, highlighting how the amount of care provided is not solely determined by geographical proximity. Moreover, adults aged 50+ were not only more likely to have provided more care, but also to have reduced their caring activities, potentially reflecting the vulnerabilities that COVID posed to older adults which in turn may have discouraged many to provide care. Thus, it is clear that individuals with similar characteristics responded to the pandemic in opposite ways. For other population subgroups changes in care provision were only in one direction. For example, those who worked from home during the pandemic and who reported to be in good health, were less likely to have provided less care, alongside being more likely to have provided more care.

Additional analyses of changes in the typology of care provided to parents from adult children (Figure 6), revealed a marked increase in shopping and a decline in giving lifts to parents during the first stage of the pandemic, reflecting the mitigation measures put in place to limit exposure to the virus. Overall, these results suggest that the pandemic generated a new set of circumstances, which impacted both the type and amount of care provision. Moreover, for some population groups, these changes were greater than for others, and not necessarily in a single direction.

Figure 6 here

Figure 6: Comparison of the type of informal care being by adult children to their non-co-resident parents between before and during the pandemic

Discussion

Informal carers play a central role in maintaining the UK's health and social care system and supporting vulnerable individuals in times of need (Bergmann and Wagner, 2021). The pandemic undoubtedly exposed the vulnerabilities of the older adult demographic with the restrictive lockdown measures causing many to rely on informal care from their adult children (Lebrasseur et al, 2021). Thus, it is important that policymakers have timely evidence to recognise, value, and support their fundamental work.

This study reveals that informal care provision altered in the context of the pandemic. Focusing on data taken from the height of the first lockdown, this study finds that 43.1% of adult children provided more care in April 2020 compared to pre-pandemic times. Whilst this

provides valuable insights into changes in the intensity of informal care exchanges during the pandemic, it is important to acknowledge certain limitations, mostly imposed by data. Firstly, the self-reported measure of care exchanges question was only available in wave 1 of the COVID study, meaning that the analysis was restricted to the first stage of the lockdown periods**.** Secondly, despite being one key element of the ICM, due to a lack of available information, the care needs of recipients and their changes in the pandemic context are unable to be directly modelled in this paper. Thirdly, the outcome variable is based on a subjective measure of changes in care exchanges meaning that it is susceptible to individual biases and interpretations, introducing a potential source of measurement error. For example, during the pandemic individuals perceptions over the definition of informal caring may have changed as there was an increased salience towards certain types of potential care activities, such as shopping, due to the lockdown measures in place.

Furthermore, an assumption is made that a self-reported change in care provision by adult children implies a change in care towards parents. The question relating to whom the care is being provided to during the pandemic is not mutually exclusive and therefore respondents could report providing care to more than one person. Therefore, although the majority of adult children do report providing care to their parents during the pandemic, it is also plausible that changes in their care provision occurred towards individuals other than parents. This is important to consider in the pandemic context where restrictions on movement and travel were introduced, which in many ways redefined the geographies of care. For example, those reporting the initiation of informal care may have extended assistance to those living in close proximity, such as neighbours, as heightened awareness of community care needs emerged during the lockdown period (Guanlan et al, 2022). In contrast, whilst reporting providing less informal care might pertain to parental care, it could also encompass a decline in assistance towards other individuals residing at a greater distance. Thus, when interpreting the findings it is important to acknowledge that the dependent variable may over-estimate the increase in care provision towards parents whilst concealing the care to individuals other than parents.

However, in spite of these limitations, this study offers valuable insights into the study of informal care. Using nationally representative data this study investigated the dispositional factors of adult children associated with changes in informal care provision during the pandemic. Despite the temporal restriction of the analysis, analysing data from April 2020 is highly relevant as it provides evidence on the immediate response of carers to the pandemic at a time of heightened uncertainty and public health risk posed to the older population. Overall, the results reveal two main findings. Firstly, we see that the usual suspects, such as women and those who lived in close proximity to those they were caring for, are more likely to take on extra caring tasks in times of need. Secondly, this study found that adult children working from home had the highest probability of providing more care, which could be driven by the greater work flexibility offered by remote working. This observation offers compelling evidence of the new enabling factors for care provision emerging from the pandemic. As such, policies that promote workplace flexibility- including hybrid working arrangements- may allow carers to sustainably balance their care responsibilities with their work commitments, reduce the negative economic and psychological effects associated with care strain, and maintain their contribution to the care system and labour market (Government Office for Science, 2016; Lam et al, 2022).

This study has also advanced the theoretical understanding of informal caring by revisiting the ICM to demonstrate the model's adaptability and applicability to help understand informal care experiences during times of changing context. Informal caring is a multidimensional and dynamic process and, as explored in the revisited theorisation of the ICM, changes in context can lead to changes in care provision. Therefore, future studies of informal care would benefit from a context-specific framing of their research that explicitly incorporates changing needs and dispositional factors arising in times of changing contexts. This approach can enhance the relevance and applicability of future findings and also contribute to the development of targeted interventions and support systems that address the heterogenous nature of informal caring across different contexts. The revisited theorisation of the ICM developed in this study provides avenue for further adaptation and research. For example, the currently unfolding cost-of-living crisis in the UK will undoubtedly impact individual's economic statuses, and as a result influence their ability to provide informal care (Carers UK, 2023). Therefore, the theoretical application and adaptability of the ICM reaches beyond the COVID context.

Conclusion

This study aimed to uncover the complexity of providing informal care within the changing context of the recent COVID-19 pandemic in the UK. The pandemic presents important insight into a plausible future scenario whereby the UK society will face an increasing demand for care due to an ageing population. During this time informal care provision will become even more vital, as an ageing population will put immense strain on formal care services (Raiber and Verbakel, 2021). Thus, results of this study provide significant guidance for the future by identifying individuals who are most likely to take on informal caring tasks in times of need. This information can be used to prepare UK policies for the future of an ageing population in which there will be a rapid rise in the demand for informal care, as has been experienced during the pandemic.

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Figure 1:

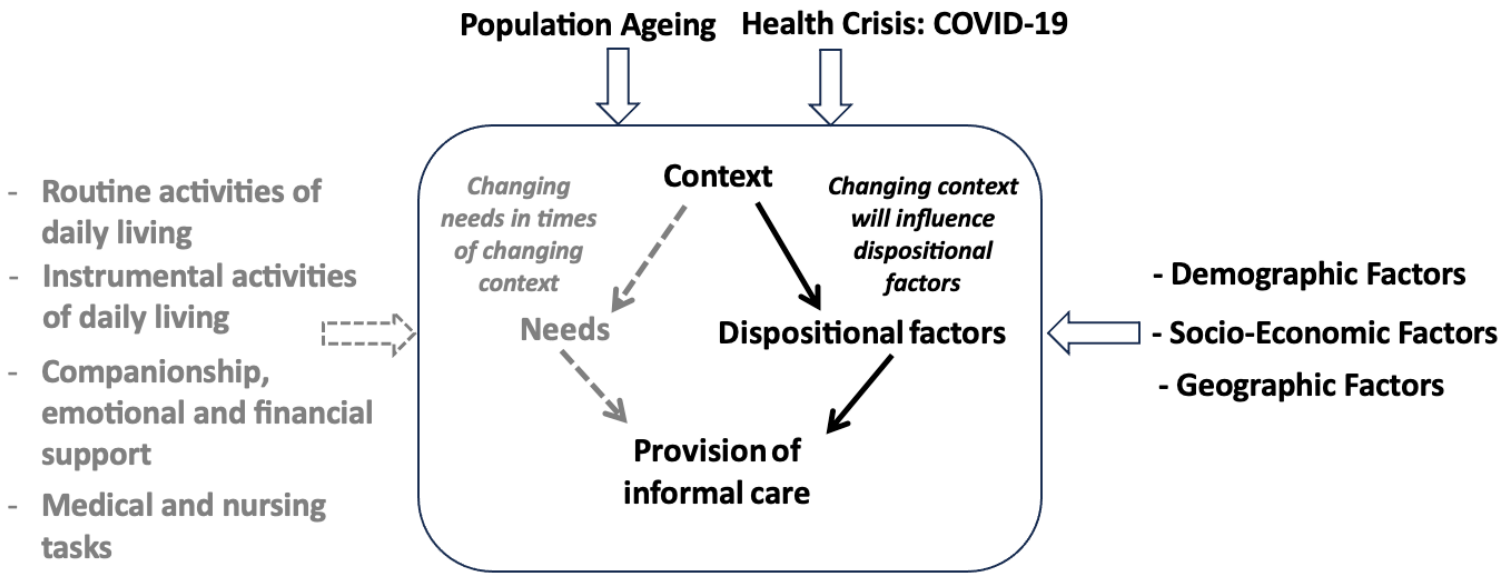

Figure 2:

Text: Thinking back to earlier this year, before the outbreak of the coronavirus pandemic. How has the help and support you give to family, friends, or neighbours who do not live in the same house/flat as you changed?

1. There has been no change
2. I give more help to some people I previously helped
3. I give less help to some people I previously helped
4. I currently help family, friends or neighbours who I did not previously help
5. Other

Figure 3:

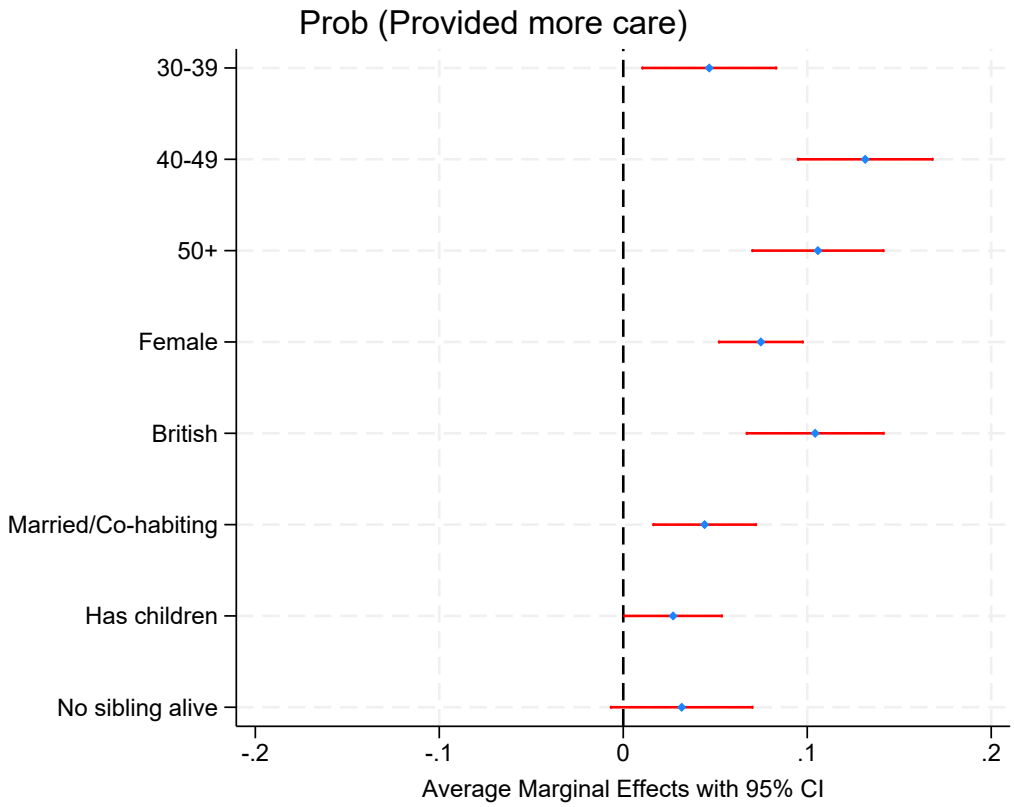
Prob (Provided more care)
30-39
40-49
50+
Female
British
Married/Co-habiting
Has children
No sibling alive
-.2
-.1
0
.1
.2
Average Marginal Effects with 95% CI

Figure 4:

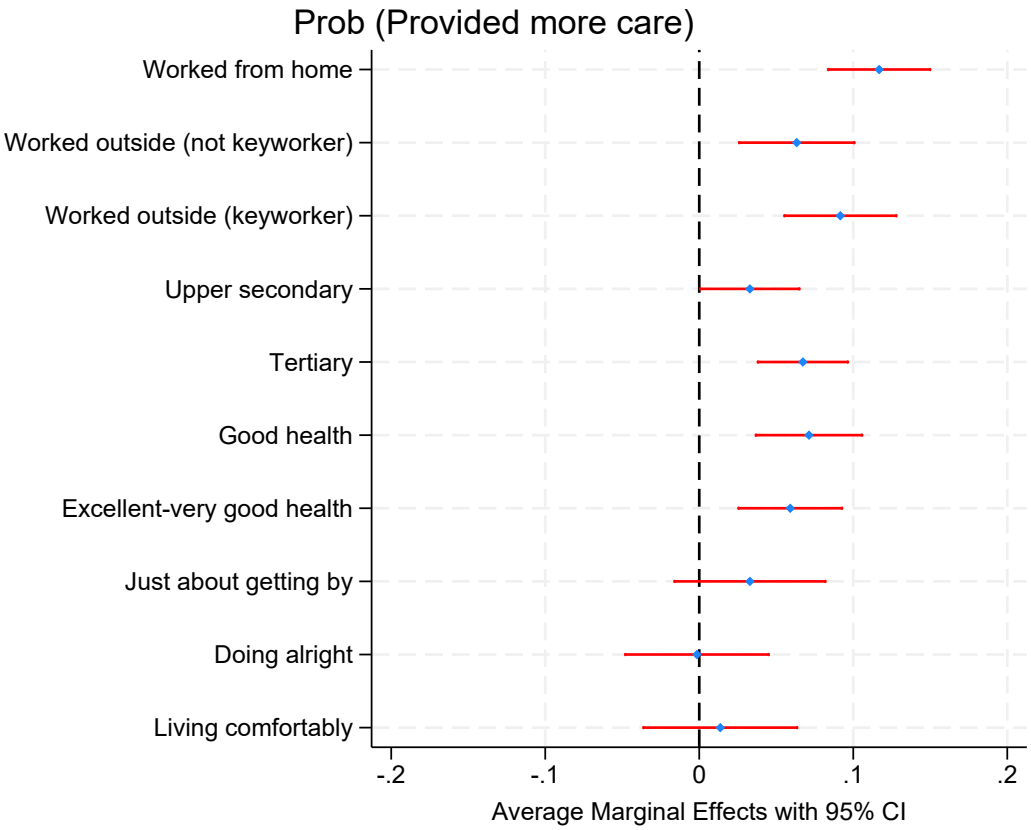
Prob (Provided more care)
Worked from home
Worked outside (not keyworker)
Worked outside (keyworker)
Upper secondary
Tertiary
Good health
Excellent-very good health
Just about getting by
Doing alright
Living comfortably
-.2
-.1
0
.1
.2
Average Marginal Effects with 95% CI

Figure 5:

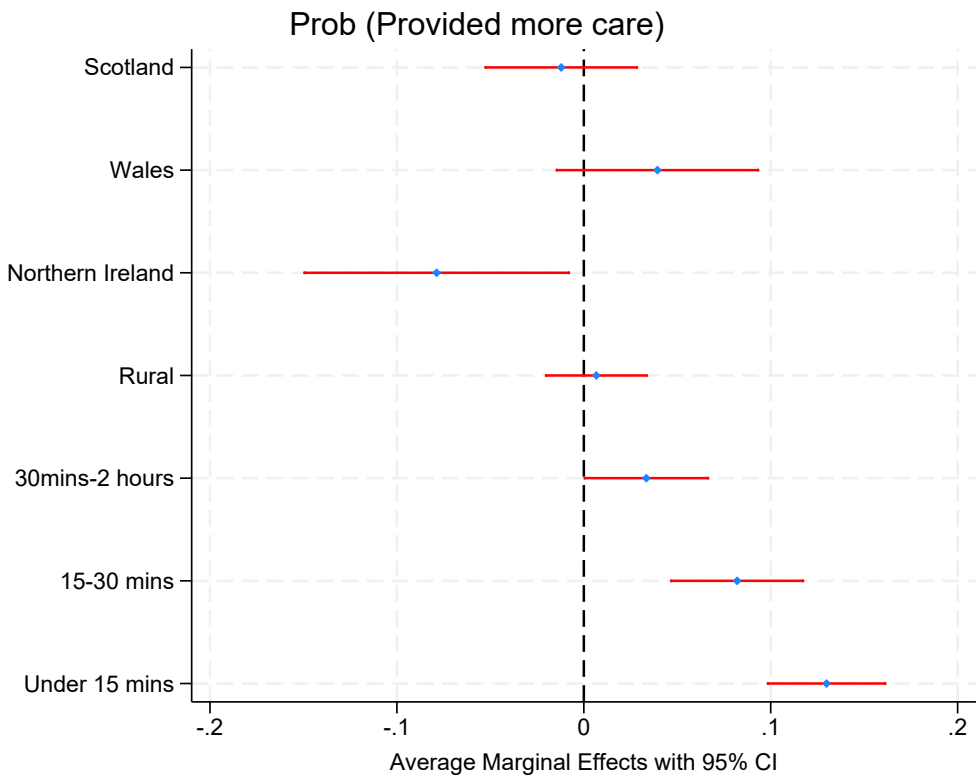
Prob (Provided more care)
Scotland
Wales
Northern Ireland
Rural
30mins-2 hours
15-30 mins
Under 15 mins
-.2
-.1
0
.1
.2
Average Marginal Effects with 95% CI

Figure 6:

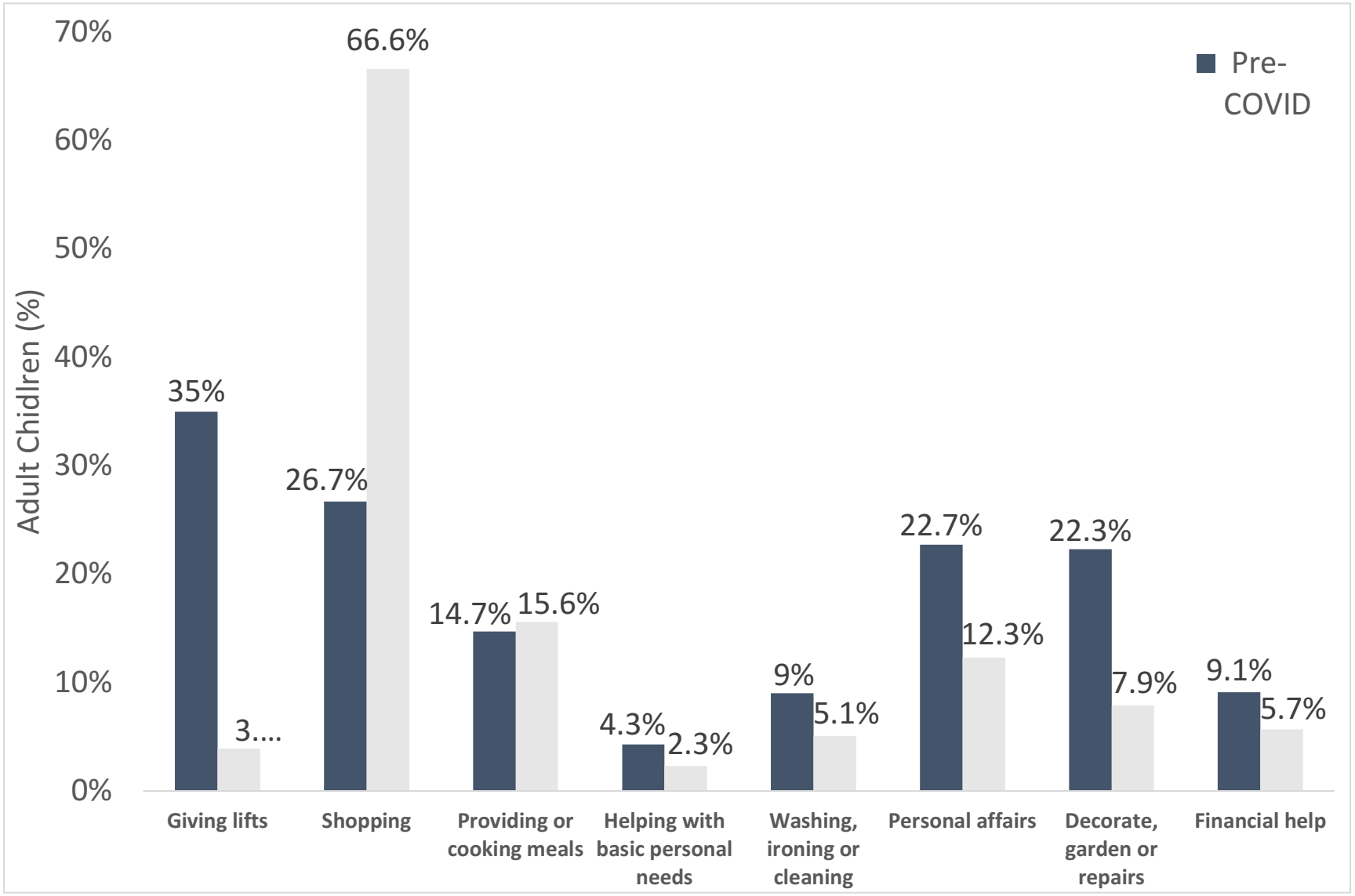
70%
60%
50%
40%
30%
20%
10%
0%
Adult Chidlren (%)
Pre-COVID
35%
3....
26.7%
66.6%
14.7%
15.6%
4.3%
2.3%
9%
5.1%
22.7%
12.3%
22.3%
7.9%
9.1%
5.7%
Giving lifts
Shopping
Providing or cooking meals
Helping with basic personal needs
Washing, ironing or cleaning
Personal affairs
Decorate, garden or repairs
Financial help

Table 1:

Dependent Variable		Never Cared	Same Provision	Provided More Care
Change in Care Provision		28.6%	15.8%	43.1%
Independent Variables				
Demographic				
Age (years)				
	18-29	17.1%	15.9%	9.2%
	30-39	29.5%	21.4%	22.8%
	40-49	30.6%	25.1%	34.9%
	50+	22.8%	37.6%	33.1%
Sex				
	Male	54.3%	44.1%	34.7%
	Female	54.7%	55.9%	65.3%
Ethnicity				
	Non-British	16.7%	21.4%	11.3%
	British	83.3%	78.6%	88.7%
Marital Status				
	Not Married	20.3%	26.4%	17.1%
	Married/Co-habiting	79.7%	73.6%	82.9%
Children in HH				
	No Children	60.0%	65.7%	56.6%
	Has Children	40.0%	34.3%	43.4%
Sibship				
	At Least One Sibling Alive	91.0%	89.2%	89.8%
	No Sibling Alive	9.0%	10.8%	10.2%
Socio-Economic				
Work Status				
	Did Not Work	16.5%	22.8%	14.8%
	Worked From Home	49.6%	37.5%	52.0%
	Worked Outside (Not Keyworker)	14.5%	19.5%	14.5%
	Worked Outside (Keyworker)	19.4%	20.2%	18.7%
Educational Attainment				
	Lower Secondary or below	19.9%	26.7%	20.0%
	Upper Secondary	19.7%	24.1%	20.0%
	Tertiary	60.4%	49.2%	60.0%
General Health				
	Fair-Poor Health	14.8%	13.9%	12.2%
	Good Health	30.9%	33.6%	33.1%

	Excellent-Very Good Health	54.3%	52.5%	54.7%
Financial Status				
	Finding Things Difficult	5.4%	5.7%	5.7%
	Just About Getting By	16.6%	19.0%	17.2%
	Doing Alright	45.7%	43.9%	45.9%
	Living Comfortably	32.3%	31.5%	31.2%
Geographic				
Country of Residence				
	England	83.0%	78.4%	80.8%
	Scotland	8.6%	9.8%	8.6%
	Wales	5.8%	5.7%	6.3%
	Northern Ireland	2.6%	6.1%	4.3%
Urban or Rural Area				
	Urban	77.0%	79.8%	74.2%
	Rural	23.0%	20.2%	25.8%
Distance to Parent				
	2 Hours +	37.1%	16.6%	20.7%
	30 Minutes-2 Hours	27.7%	18.5%	20.7%
	15-30 Minutes	14.3%	20.6%	19.0%
	Under 15 Minutes	20.9%	44.3%	39.6%

Table 2

		A Never Cared		B Same Provision		C Provided More Care		D Provided Less Care	
		AME	*P-Value*	*AME*	*P-Value*	*AME*	*P-Value*	*AME*	*P-Value*
Age (years)	18-29	Reference							
	30-39	-0.047	0.014	-0.015	0.262	0.047	0.012	0.016	0.188
	40-49	-0.111	<0.001	-0.016	0.237	0.132	<0.001	-0.004	0.695
	50+	-0.220	<0.001	0.021	0.118	0.106	<0.001	0.093	<0.001
Sex	Male	Reference							
	Female	-0.057	<0.001	-0.045	<0.001	0.075	<0.001	0.029	<0.001
Ethnicity	Non-British	Reference							
	British	0.012	0.466	-0.137	<0.001	0.104	<0.001	0.021	0.096
Marital Status	Not Married	Reference							
	Married/Co-habiting	-0.005	0.719	-0.035	<0.001	0.044	0.002	-0.004	0.654
Children in HH	No Children	Reference							
	Has Children	-0.009	0.459	-0.032	0.001	0.027	0.045	0.014	0.148
Sibship	At Least One Sibling Alive	Reference							
	No Sibling Alive	0.004	0.816	-0.013	0.360	0.032	0.105	-0.023	0.060
Work Status	Did Not Work	Reference							
	Worked from Home	-0.051	0.002	-0.033	0.009	0.117	<0.001	-0.033	0.007
	Worked Outside (Not a Keyworker)	-0.035	0.050	0.008	0.565	0.063	<0.001	-0.037	<0.001
	Worked Outside (Keyworker)	-0.035	0.060	-0.008	0.553	0.092	<0.001	-0.049	0.006
Educational Attainment	Lower Secondary or below	Reference							
	Upper Secondary	-0.044	<0.001	0.014	0.256	0.033	0.045	-0.003	0.767
	Tertiary	-0.050	<0.001	-0.030	0.006	0.067	<0.001	0.012	0.216
General Health	Fair-Poor Health	Reference							
	Good Health	-0.021	0.197	0.017	0.167	0.071	<0.001	-0.067	<0.001
	Excellent-Very Good Health	-0.021	0.187	0.036	0.003	0.059	<0.001	-0.074	<0.001

Financial Status	Findings Things Difficult	Reference							
	Just About Getting By	-0.062	0.010	0.002	0.894	0.033	0.188	0.027	0.081
	Doing Alright	-0.009	0.655	-0.001	0.948	-0.001	0.950	0.012	0.402
	Living Comfortably	-0.036	0.125	0.017	0.348	0.014	0.591	0.005	0.753
Country of Residence	England	Reference							
	Scotland	-0.026	0.155	0.035	0.039	-0.012	0.559	0.004	0.773
	Wales	-0.031	0.199	-0.015	0.418	0.039	0.152	0.007	0.702
	Northern Ireland	0.008	0.801	0.079	0.012	-0.079	0.029	-0.010	0.713
Urban or Rural Area	Urban	Reference							
	Rural	0.040	0.002	-0.038	<0.001	0.007	0.625	-0.009	0.306
Distance to Parent	2 Hours +	Reference							
	30 Minutes-2 Hours	-0.116	<0.001	0.055	<0.001	0.033	0.047	0.028	0.014
	15-30 Minutes	-0.210	<0.001	0.079	<0.001	0.082	<0.001	0.049	<0.001
	Under 15 Minutes	-0.287	<0.001	0.137	<0.001	0.130	<0.001	0.020	0.054
Number of Observations	*7,459*								